

Abstract

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To manufacture composite materials containing silicon nitride and metal silicide and having fixed electrical properties, in an industrially simple and energy-saving fashion, the aim being to produce the molded articles, virtually with their final contours, from the composite materials, prior to the sintering operation, and to specify representatives of such composite materials, a method is proposed where a parent substance containing Si_3N_4 and metal silicide is subjected to the gas pressure sintering in a nitrogenous atmosphere, where, as metal silicide, Me_5Si_3 is introduced into the parent substance, where the partial nitrogen pressure is established as a function of the sintering temperature in such a way that, still stable at the lower limit of the practical range is Si_3N_4 and, at the upper limit, Me_5Si_3 and a silicon-containing composite material, whose silicon-containing constituent is made of Si_3N_4 and of a metal silicide, the metal silicide being selected from the group Nb_5Si_3 , V_5Si_3 , Ta_5Si_3 and W_5Si_3 .

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